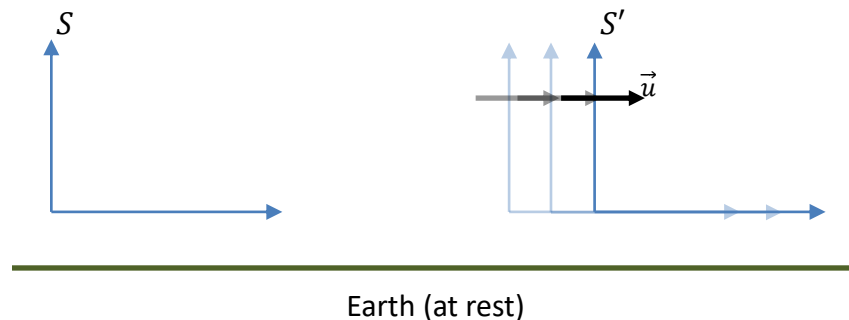


CONCEPT: INERTIAL REFERENCE FRAMES

- A reference frame is a coordinate system that you make measurements in, and there are two types:
 - Inertial reference frames, which move at _____ velocity
 - Noninertial reference frames, which move at _____ velocity – i.e, they have _____
- Inertial reference frames are always thought of as being of two types (this is by convention)
 - Rest frames: frames which have a “_____” velocity
 - Moving frames: frames which have a “_____” velocity
 - Lab frames are a common type of rest frame, which are at rest with respect to the _____ (like a lab)
 - Frames that move at the same velocity as an “event” as known as _____ frames
- There is no such thing as absolute velocity, so “zero” and “nonzero” velocity doesn’t actually mean anything
 - These are just conventions established for us as humans to better understand problems
 - Out in space, far away from the surface of the Earth, a lab frame is arbitrarily chosen
- Near the surface of the Earth, we can say that some frame S is our lab frame and S' is our moving frame
 - By convention, $\vec{u}$ typically represents the velocity of S' relative to the surface of the Earth
 - Velocities given in S are typically represented by $\vec{v}$, and velocities in S' by $\vec{v}'$



- Noninertial reference frames are very important in physics, too, but they won’t be emphasized (or really discussed)
 - Special Relativity does NOT deal with noninertial frames – General Relativity does
 - The surface of the Earth is moving in a circle, so it’s actually a _____ reference frame
 - However, the Earth rotates VERY slowly, so lab frames are basically inertial frames
 - The fact that reference frames are noninertial on Earth is what gives rise to the Coriolis and centrifugal forces